performance and leads to decreased capacitance and increased internal resistance. If the moisture in the cells is electrolyzed to form a gas, the gas remains in the pores and expels electrolyte from the pores which will lower the capacitance, particularly after long-term use. It is therefore an object of the present invention to address the problems associated with the moisture in an electric double layer capacitor. Accordingly, the present invention as set forth in Claims 5, 12 and 20 relates to methods for producing electric double layer capacitors in which the organic electrolyte contains benzene or its chlorine derivative (specification, page 1-4). The benzene or its chlorine derivative have a high affinity to the pseudo-graphite surface present on the inner walls of pores of the carbonaceous material and are likely to be adsorbed instead of water in the fine pores. When a voltage is applied, the water can be electrolyzed and the gas will be present outside the fine pores and can be discharged as bubbles out of the element. In contrast, in conventional elements, having no benzene or chlorine derivative in the electrolyte, the gas generated by the electrolysis of water in the fine pores will remain in the fine pores, thereby deteriorating the performance of the capacitor (specification, page 6, line 7 to page 7, line 12).

The present invention as set forth in amended Claims 5, 12 and 20 relates to methods for producing an electric double layer capacitor. Notably, the capacitor has an organic electrolyte which contains, in addition to the above mentioned benzene and its chlorine derivative,

a) a solvent selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof; or

b) a solvent mixture of sulfolane and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate,

acetonitrile, glutaronitrile and a mixture thereof; or

c) a solvent mixture of a sulfolan derivative and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof.

Morimoto et al fails to disclose or suggest a method for producing an electric double layer capacitor 1) having the claimed organic solvent in the organic electrolyte, 2) having the claimed specific surface area of 100 to 3000 m^2/g of the carbonaceous material of the electrodes, and 3) which is maintained at reduced pressure after the voltage is applied as set forth in Claims 5, 12 and 20.

Morimoto et al discloses an electric double layer capacitor having an electrolyte dissolved in sulfolane or a sulfolane derivative (abstract). The sulfolane solvent may be mixed with propylene carbonate or butylene carbonate (Morimoto et al, col. 2, lines 34 and 35). However, the claimed combinations a)-c) of the solvents is neither disclosed nor suggested.

In addition, this reference fails to disclose or suggest to maintain the element under reduced pressure after the application of the voltage to the element. However, such procedure is advantageous because the generated gas is more effectively removed from the cell (specification, page 8, lines 12-18).

Wei et al do not cure the defects of the primary reference because they fail to disclose or suggest the benzene or its chlorine derivative in the electrolyte as claimed. However, as stated above, if no benzene or chlorine derivative are used, at least some gas generated by the electrolysis of water in the fine pores will also remain in the fine pores thereby deteriorating the performance of the capacitor, particularly after long-term use (specification, page 6, line 7 to page 7, line 12). For example, Example 1 of the present invention demonstrates how a

capacitor having benzene performs while Example 13 shows a capacitor having no additive (Table 1 at page 17 and Table 2 at page 18). After a durability test, the service capacitance of Example 1, having the benzene, is 1430 F and has changed from the initial state by 17%, the internal resistance has increased 80% to 5mΩ. The conventional capacitor having no benzene (comparable to Wei et al) has service capacitance of 950 F which correlates to a change from the initial state by 45%, the internal resistance has increased 192% to 8.8mΩ. Thus, an electrolyte having an additive is superior to an electrolyte having no additive, as is further shown by Examples 2-12 at page 17 and 18 of the specification. Further, one of ordinary skill in the art is not likely to consult the Wei et al reference because it pertains to the conventional electric double layer capacitor that has no benzene or chlorine derivative.

Further, Wei et al fails to disclose or suggest the solvent combination in parts b) and c) of Claims 5, 12 and 20.

Therefore, the rejection of Claims 2, 4, 5, 7, 9-11, 20-21, 23, 24, 26 and 27 under 35 U.S.C. §103(a) over Morimoto et al (U.S. 4,725,927) in view of Wei et al (U.S. 6, 152, 970) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejection of Claims 3, 12-15, 17-19 and 22 under 35 U.S.C. §103(a) over Morimoto et al (U.S. 4,725,927) in view of Wei et al (U.S. 6, 152, 970) in further view of Tsushima (JP 100041199) is respectfully traversed.

Tsushima fails to cure the defects of the primary reference because it fails to disclose or suggest that the electrolyte has a benzene or its chlorine derivative or a solvent as claimed in Claims 5, 12 and 20 of the present invention. In addition, this reference fails to disclose or suggest to maintain the element under reduced pressure after the application of the voltage to the element. However, such procedure is advantageous because the generated gas is more

effectively removed from the cell (specification, page 8, lines 12-18).

In addition, there is no disclosure or suggestion that the voltage is applied to the element in a dry atmosphere in an open condition as set forth in Claim 12. Tsushima merely discloses that the voltage is applied before and after the case is sealed (abstract). However, there is no teaching in the reference that the environmental atmosphere be dry.

Therefore, the rejection of Claims 3, 12-15, 17-19 and 22 under 35 U.S.C. §103(a) over Morimoto et al (U.S. 4,725,927) in view of Wei et al (U.S. 6, 152, 970) in further view of Tsushima (JP 100041199) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejection of Claims 8 and 25 under 35 U.S.C. §103(a) over Morimoto et al (U.S. 4,725,927) in view of Wei et al (U.S. 6, 152, 970) in further view of Grigortchak et al (U.S. 5,351,164) is respectfully traversed.

Claims 8 and 25 depend on Claims 5 and 20. Grigortchak et al fail to disclose the claimed methods for producing an electric double layer capacitor having the claimed organic solvent in the organic electrolyte.

Grigortchak et al does not at all pertain to an electric doble layer capacitor having an organic electrolyte as claimed. This reference discloses that the electrolyte consists of an aqueous solution of alkali, preferably $LiClO_4$, in propylene carbonate (Grigortchak et al, col. 6, lines 59-61). Thus, one of skill in the art has no motivation whatsoever to consult this reference as it pertains to a completely different type of capacitor. Looking at a capacitor that actually utilizes an aqueous electrolyte is contrary to the present invention, where the presence of water is to be excluded from the organic electrolyte.

Therefore, the rejection of Claims 8 and 25 under 35 U.S.C. §103(a) over Morimoto et al (U.S. 4,725,927) in view of Wei et al (U.S. 6, 152, 970) in further view of Grigortchak et

al (U.S. 5,351,164) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejection of Claim 16 under 35 U.S.C. §103(a) over Morimoto et al (U.S. 4,725,927) in view of Wei et al (U.S. 6, 152, 970) and Tsushima (JP 100041199) in further view of Grigortchak et al (U.S. 5,351,164) is respectfully traversed.

Claim 16 depends on Claim 12. None of the cited references discloses or suggests a method for producing an electric double layer capacitor having the claimed organic solvent in the organic electrolyte as discussed above. Even a combination of Morimoto et al, Wei et al, Tsushima and Grigortchak et al does not result in the invention as claimed in Claim 16.

Therefore, the rejection of Claim 16 under 35 U.S.C. §103(a) over Morimoto et al (U.S. 4,725,927) in view of Wei et al (U.S. 6, 152, 970) and Tsushima (JP 100041199) in further view of Grigortchak et al (U.S. 5,351,164) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

This application is now in condition for allowance. Early notice of such action is earnestly solicited.

Respectfully submitted,

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AMENDMENT AND REQUEST FOR RECONSIDERATION

IN THE CLAIMS

Claims 10, 18, 27. (Canceled)

--5. (Twice Amended) A method for producing an electric double layer capacitor, which comprises impregnating an element comprising positive and negative electrodes facing each other with a separator interposed between them, with an organic electrolyte capable of forming an electric double layer on the surface of the electrodes to store electric charge, and then applying a voltage to the element, wherein said positive and negative electrodes are made of electrodes containing a carbonaceous material having a specific surface area of from 100 to 3,000 m^2/g, and said organic electrolyte contains benzene or its chlorine derivative having at least one hydrogen atom of benzene substituted by a chlorine atom;

wherein after the application of a voltage to the element, the element is maintained under reduced pressure;

wherein the organic electrolyte contains

a) a solvent selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof; or

b) a solvent mixture of sulfolane and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof; or

c) a solvent mixture of a sulfolan derivative and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl

carbonate, acetonitrile, glutaronitrile and a mixture thereof.

12. (Amended) A method for producing an electric double layer capacitor, which comprises impregnating an element comprising positive and negative electrodes facing each other with a separator interposed between them, with an organic electrolyte capable of forming an electric double layer on the surface of the electrodes to store electric charge, and then applying a voltage to the element, wherein said positive and negative electrodes are made of electrodes containing a carbonaceous material having a specific surface area of from 100 to 3,000 m^2/g, and said organic electrolyte contains benzene or its chlorine derivative having at least one hydrogen atom of benzene substituted by a chlorine atom;

wherein the voltage is applied to the element in a dry atmosphere in an open condition, and thereafter, the element is maintained under reduced pressure;

wherein the organic electrolyte contains

a) a solvent selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof; or

b) a solvent mixture of sulfolane and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof; or

c) a solvent mixture of a sulfolan derivative and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof.

20. (Amended) A method for producing an electric double layer capacitor, which comprises impregnating an element comprising positive and negative electrodes facing each other with a separator interposed between them, with an organic electrolyte capable of

forming an electric double layer on the surface of the electrodes to store electric charge, and then applying a voltage to the element, wherein said positive and negative electrodes are made of electrodes containing a carbonaceous material having a specific surface area of from 100 to 3,000 m^2/g, and said organic electrolyte contains benzene or its chlorine derivative having at least one hydrogen atom of benzene substituted by a chlorine atom;

wherein after the application of a voltage to the element, the element is maintained under a reduced pressure of at most 160 Torr;

wherein the organic electrolyte contains

a) a solvent selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof; or

b) a solvent mixture of sulfolane and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof; or

c) a solvent mixture of a sulfolan derivative and a solvent selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, diethyl carbonate, acetonitrile, glutaronitrile and a mixture thereof.--